

Renewing Indiana

Indiana Renewable Energy Conference

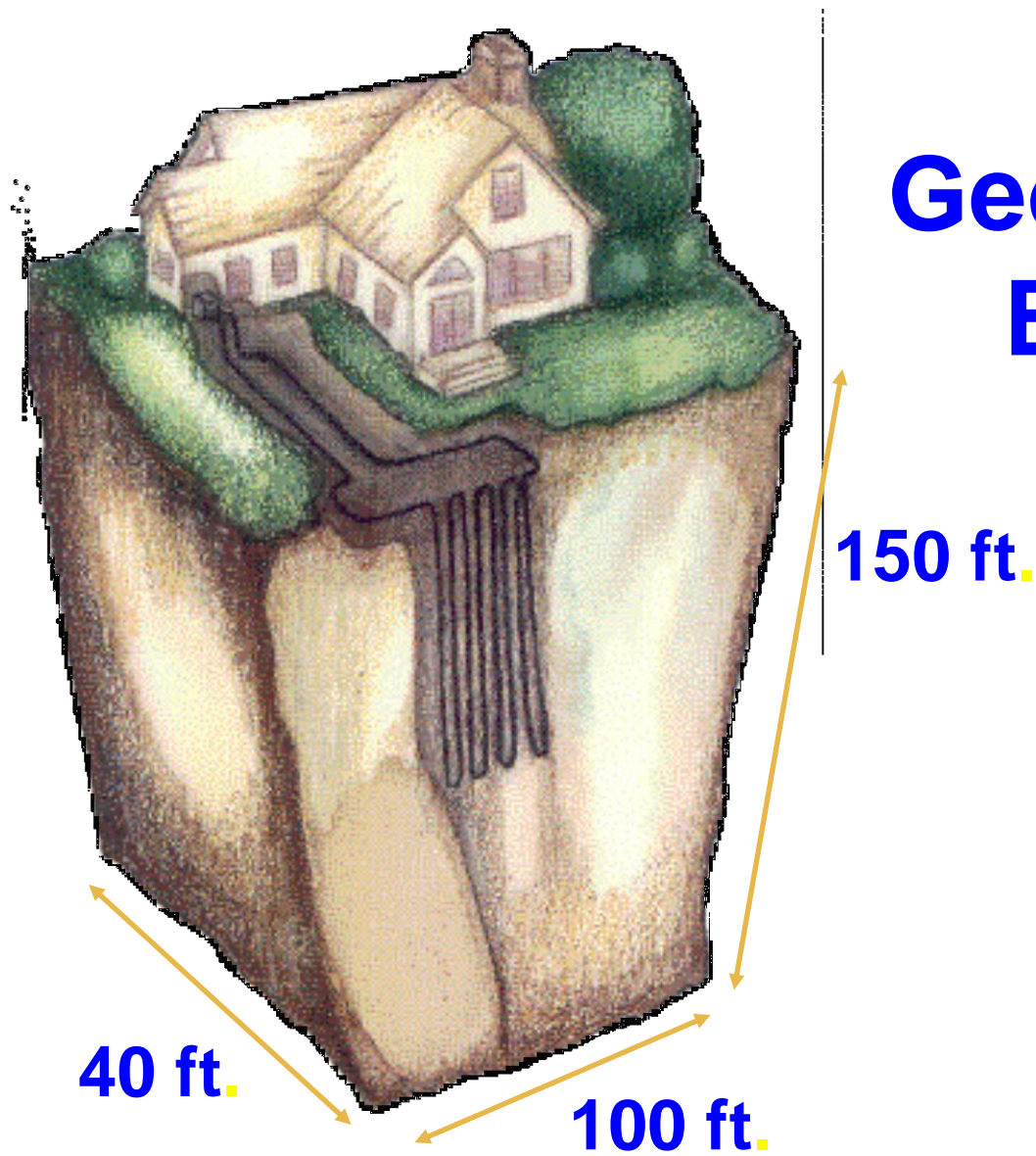


LoopMaster[®]

*Geothermal Earth Loop
Design and Installation*

Pat Cline – General Manager Residential Sales

Geothermal Energy



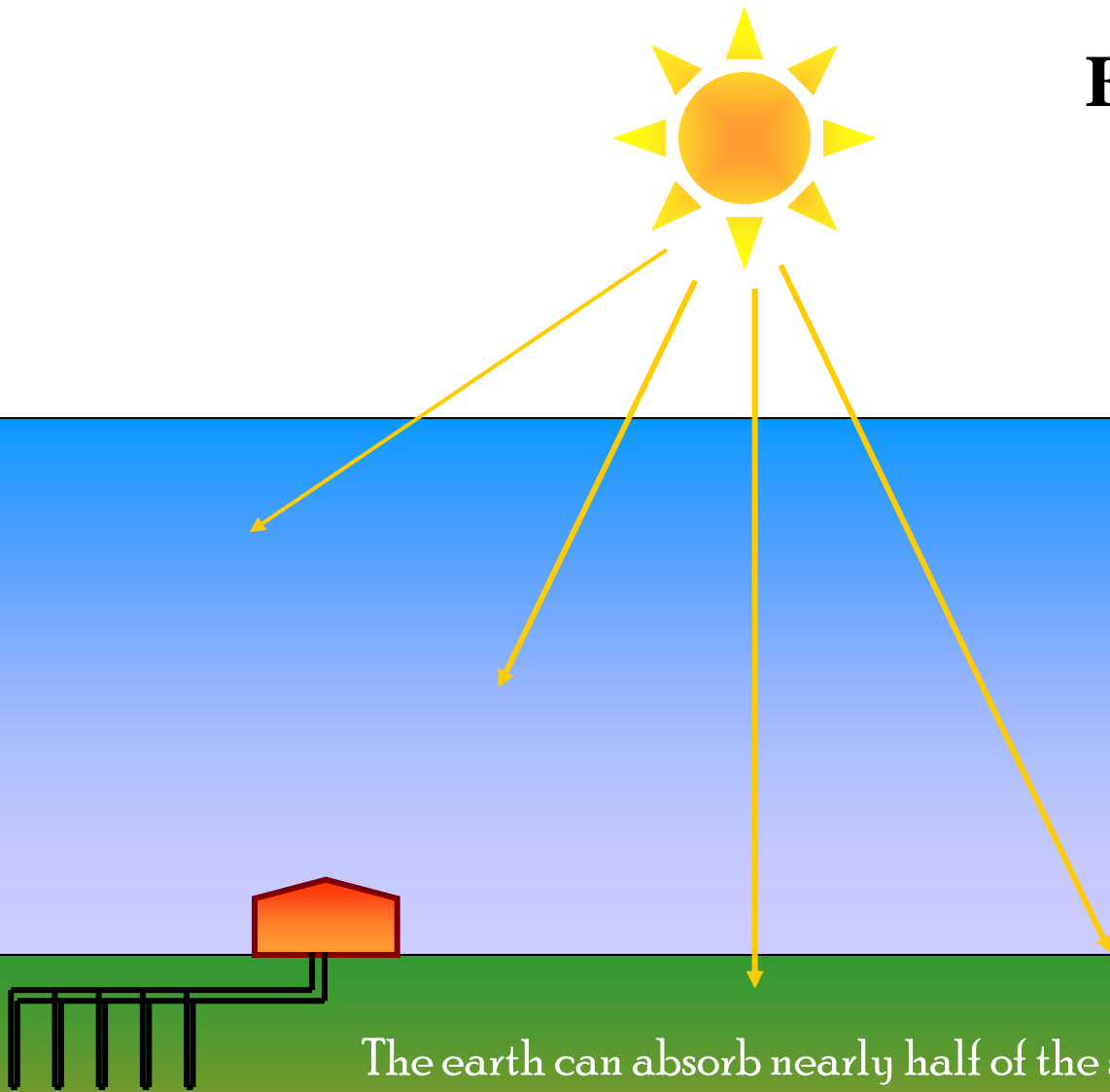
Geothermal Concepts

- What is geothermal?
 - “Low Temperature” geothermal energy involves the use of a heat pump to move the energy
- Energy is transferred through a series of closed loop pipes buried in the ground

Geothermal Concepts

- A geothermal heat pump “moves” energy to and from the ground, instead of to and from the air like traditional air source heat pumps
- A heat pump “moves” energy from one location to another instead of burning fossil fuels like a gas furnace

Energy Source



The earth can absorb nearly half of the sun's energy. The ground stays a relatively constant temperature through the seasons, able to absorb the rejected heat in summer and release this heat stored back in the winter.

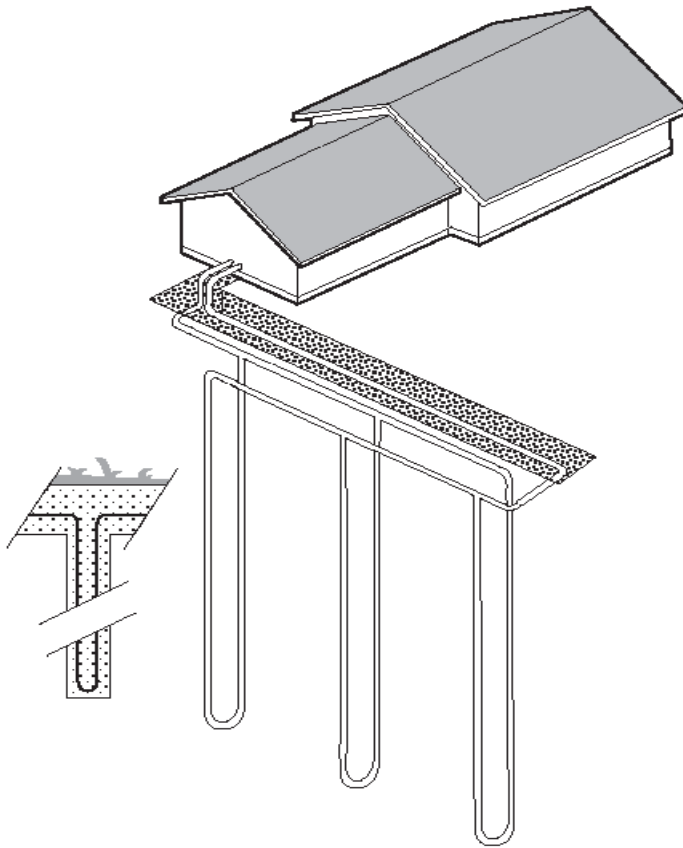
Vertical Ground Loops

Closed loop systems

Vertical (drilled) loops

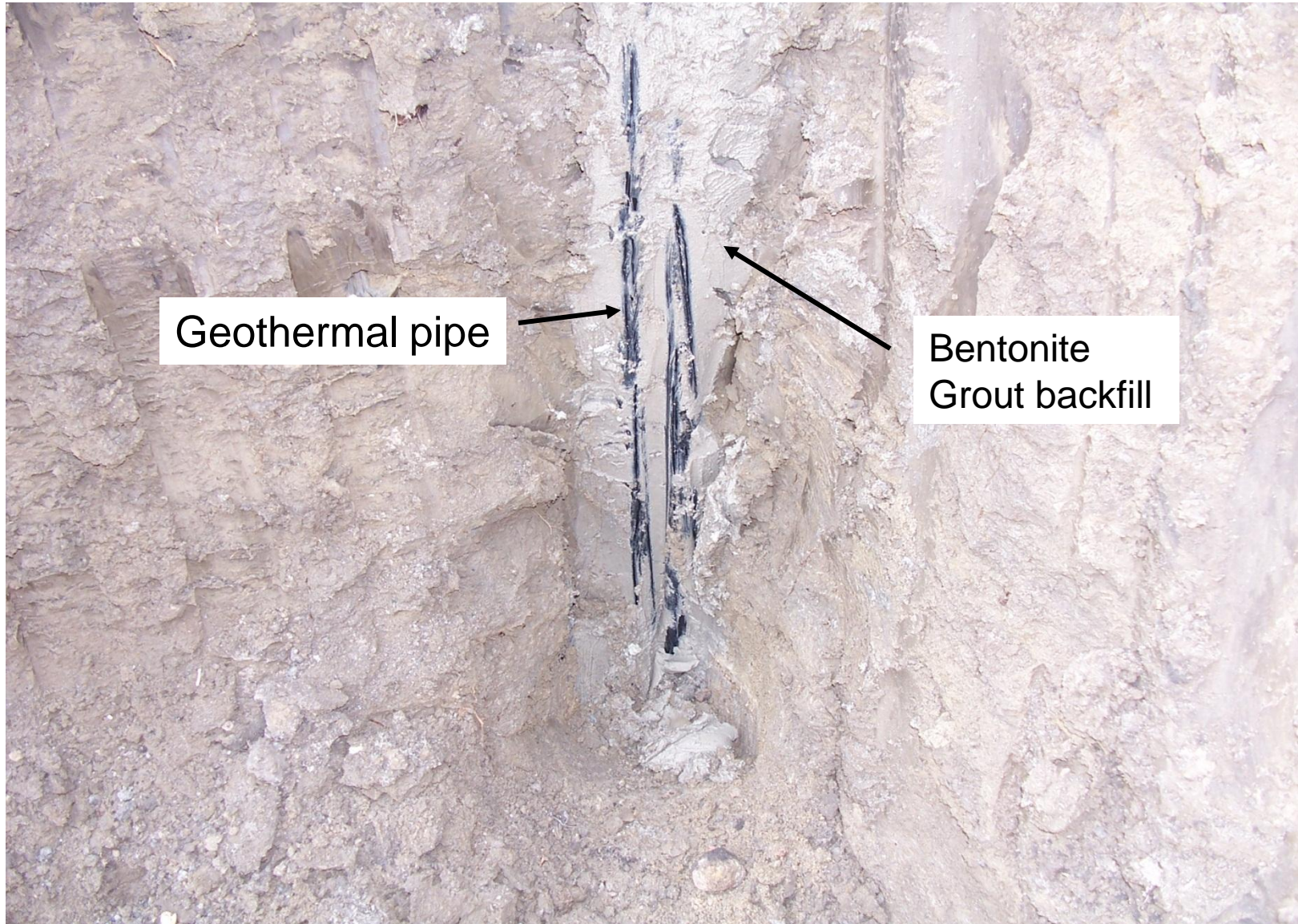
- Keeps space needed for a closed loop to a minimum
- 150ft to 300ft bore per ton depending upon climate
- 10ft to 20ft spacing between bores, depending upon application
- Uses polyethylene pipe and heat fusion (welded) couplings for long life and durability

Vertical Loops



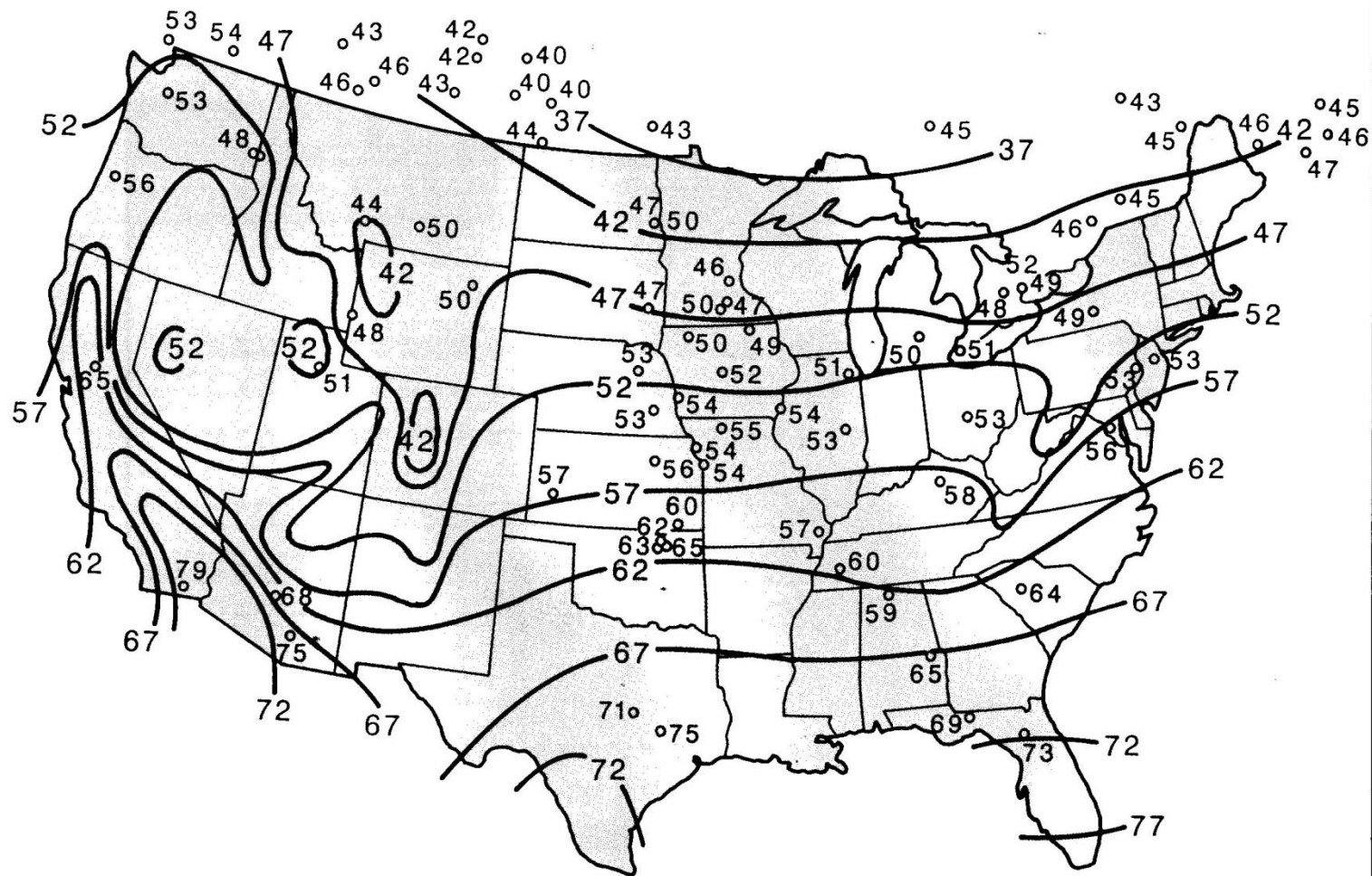


Vertical Loop/Grouted



Drilling Rigs





VALUES OF MEAN ANNUAL EARTH TEMPERATURE FROM OBSERVATIONS AT INDIVIDUAL STATIONS ARE SUPERIMPOSED UPON COLLINS' ESTIMATED (1925) WELL-WATER ISOTHERMS.

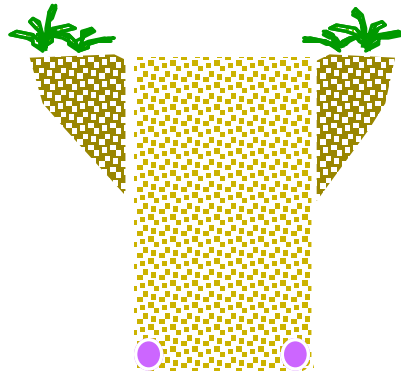
FIGURE 4.17: Mean Earth Temperature, T_M (°F)

Horizontal Ground Loops

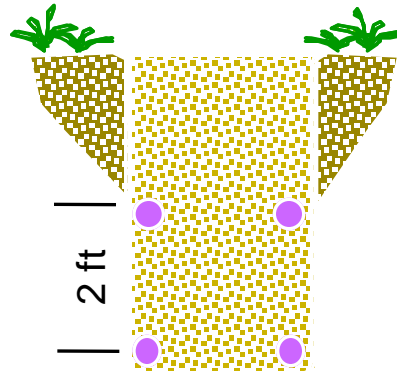
Horizontal (trenched) loops

- Various methods and piping arrangements, depending upon available space
 - 1 pipe, 2 pipe, 4 pipe, trencher style
 - 4 pipe and 6 pipe backhoe style
 - Slinky (coiled pipe) trencher and backhoe loops
 - Horizontal bore loops for sites where space cannot be disturbed
- 100 ft. to 350 ft. of trench per ton, depending upon climate and loop type.
- Uses polyethylene pipe and heat fusion (welded) couplings for long life and durability.

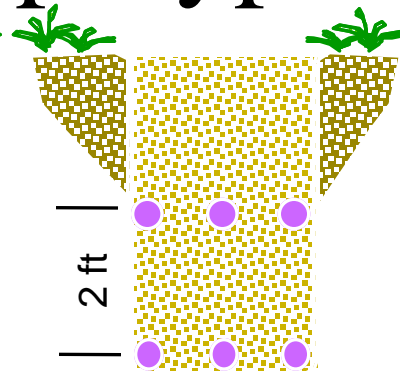
Horizontal Loop Types



Two-Pipe

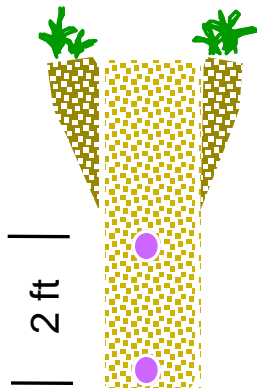


Four-Pipe

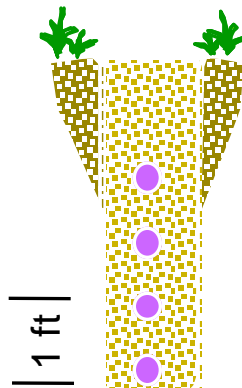


Six-Pipe

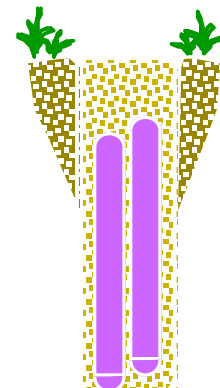
Back-Hoe Loops



Two-Pipe



Four-Pipe



Extended Slinky

Trenched Loops



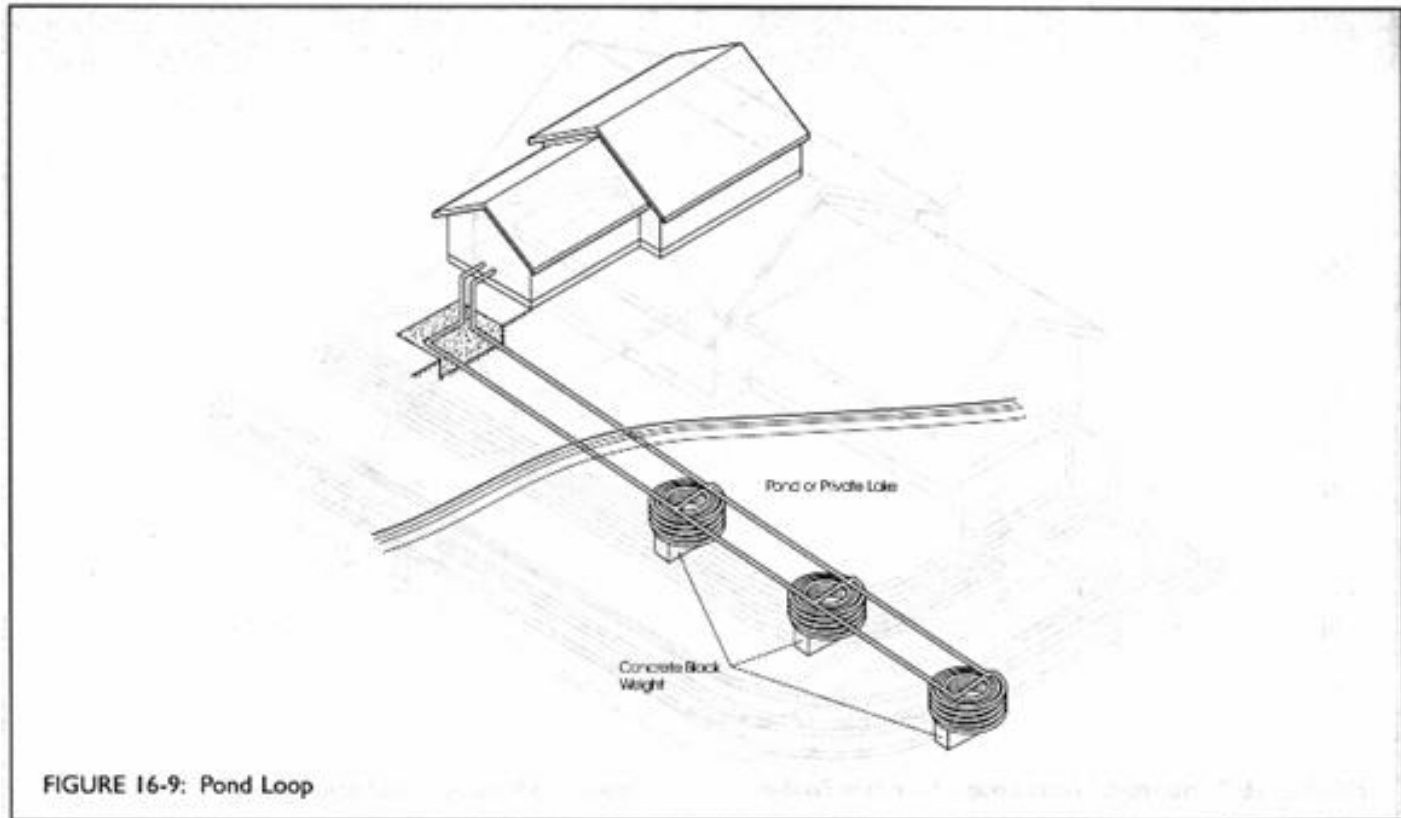
Pond/Lake Loops

Pond/ Lake loops

- **Minimizes excavation when a body of water is on site**
- **Approximately 300 ft. of pipe per ton**
- **Excellent use of retention ponds**
- **Uses polyethylene pipe and heat fusion (welded) couplings for long life and durability.**



Pond/Lake Loop



Horizontal Bore Loops

Horizontal bored loops

- A horizontal bore hole is drilled approximately 10 feet deep 200 foot in length per ton of connected equipment.
- Horizontal bore loops for sites where space cannot be disturbed
- 2 pipes per bore, in some soil conditions grouting may be required.
- Uses polyethylene pipe and heat fusion (welded) fittings for long life and durability.





System Materials

- High Density Polyethylene
 - Flexible
 - Heat Fusion Capable
 - Socket
 - Butt

Resources

- WaterFurnace International
 - www.waterfurnace.com
 - www.loopmaster.net

Questions?





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1-317-246-LOOP

Thank You!